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(57) Abstract :

The invention discloses an electronic device (100) for enhancing Bluetooth range and reliability. It comprises a multi-element antenna (101), smart power amplifier (102), interference cancellation module (103), frequency management controller (104), and microcontroller unit (105). The antenna provides beamforming for extended range, the amplifier ensures adaptive power efficiency, and the interference module suppresses signal disruptions. The frequency controller dynamically allocates channels, while the microcontroller synchronizes all operations. Together, these components achieve robust, energy-efficient, and backward-compatible Bluetooth connectivity for consumer, industrial, and healthcare applications.

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